Claims

1. A process for producing levodione from ketoisophorone which comprises contacting ketoisophorone with NADPH dehydrogenase in the presence of NADH or NADPH in an aqueous medium, and isolating the resulted levodione from the reaction mixture.

2. The process according to claim 1, wherein the NADPH dehydrogenase is old yellow enzyme defined by the enzyme class EC 1.6.99.

3. The process according to claims 1 or 2, wherein the enzyme is obtainable from a microorganism suitable for the production of the NADPH dehydrogenase.

4. The process according to claim 3, wherein the microorganism is selected from the group of genera consisting of *Saccharomyces*, *Zygosaccharomyces*, *Candida*, *Gluconobacter*, *Beneckea*, and *Vibrio*.

5. The process according to claims 3 or 4, wherein the microorganism is *Saccharomyces cerevisiae*.

6. The process according to claims 3 or 4 wherein the microorganism is *Saccharomyces cerevisiae* S288C (ATCC 204508), a functional equivalent, subculture, mutant or variant thereof.

7. The process according to claims 1 or 2, wherein the NADPH dehydrogenase is old yellow enzyme encoded by the oye2 or oye3 gene derived from *Saccharomyces cerevisiae* S288C (ATCC 204508).

8. The process according to any one of claims 1 to 7, wherein the reaction is carried out at pH values of from 4.5 to 8.5 and at a temperature in the range of from 20 to 40°C.

9. The process according to any one of claims 1 to 7, wherein the reaction is carried out at pH values of from 5.0 to 8.0 and at a temperature in the range of from 25 to 35°C.

10. A process for producing levodione from ketoisophorone which

comprises contacting ketoisophorone with a transformed microorganism expressing NADPH dehydrogenase or a cell-free extract thereof in the presence of NADH or NADPH in an aqueous medium, and isolating the obtained levodione from the reaction mixture.

11. The process according to claim 10, wherein the recombinant microorganism is *Escherichia coli*.

12. The process according to claims 10 or 11, wherein the NADPH dehydrogenase is old yellow enzyme defined by the enzyme class EC 1.6.99.

13. The process according to claim 10, wherein the enzyme expressed by the transformed microorganism is derivable from a microorganism selected from the group consisting of the genera *Saccharomyces*, *Zygosaccharomyces*, *Candida*, *Gluconobacter*, *Beneckea*, and *Vibrio*.

14. The process according to any one of claims 10 to 13, wherein the enzyme expressed by the transformed microorganism is derived from *Saccharomyces cerevisiae*, preferably *Saccharomyces cerevisiae* S288C (ATCC 204508).

15. The process according to any one of claims 10 to 14, wherein the NADPH dehydrogenase expressed by the transformed microorganism is old yellow enzyme encoded by the oye2 or oye3 gene derived from *Saccharomyces cerevisiae* S288C (ATCC 204508).

16. The process according to any one of claims 10 to 15, wherein the reaction is carried out at pH values of from 4.5 to 8.5 and at a temperature in the range of from 20 to 40°C.

17. The process according to any one of claims 10 to 15, wherein the reaction is carried out at pH values of from 5.0 to 8.0 and at a temperature in the range of from 25 to 35°C.

18. The invention substantially as described hereinbefore, especially with reference to the Examples.

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